MONTHLY WEATHER REVIEW.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for September 1902, is based on reports from about 3,100 stations furnished by employees and voluntary observers, classified as follows: Regular stations of the Weather Bureau, 160; West Indian service stations, 17; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,562; Army post hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Government Survey, 75; Canadian Meteorological Service, 33; Jamaica Weather Service, 130; Mexican Telegraph Service, 20; Mexican voluntary stations, 7; Mexican Telegraph Company, 3; Costa Rican Service, 7. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Lieut. Commander W. H. H. Southerland, Hydrographer, United States Navy; H. Pittier, Director of the Physico-Geographic Institute, San Jose, Costa Rica; Capt. François S. Chaves, Director of the Meteorological Observatory, Ponta Delgada, St. Michaels, Azores; W. M. Shaw, Esq., Secretary, Meteorological Office, London; and Rev. Josef Algué, S. J., Director, Philippine Weather Service; H. H. Cousins, Chemist, and in charge of the Jamaica Weather Office.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is 157° 30′, or $10^h\ 30^m$ west of Greenwich. The Costa Rican standard of time is that of San Jose, $0^h\ 36^m\ 13^s$ slower than seventy-fifth meridian time, corresponding to $5^h\ 36^m$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

No storms of tropical origin appeared in the middle latitudes of the North Atlantic. From the 1st to the 4th a disturbance passed eastward over the British Isles, with reported barometric pressure 29.07 inches at Malin Head, Ireland, on the 3d, and 29.08 inches at Sumburgh, Scotland, on the 4th. From the 9th to the 12th a disturbance of moderate strength moved from a position near the Azores northeastward to the south part of the North Sea. During the 15th the barometer fell rapidly over Scotland, and on the morning of the 16th a reading of 29.22 inches was reported at Sumburgh. During the 16th the storm center moved beyond the region of observation in the direction of the Scandinavian Peninsula. On the 17th there was evidence of a storm development near the Azores, where a trough of low barometric pressure was shown between two areas of high barometric pressure, one southwest of the British Isles, and the other over the western Atlantic. At 8 a. m. of the 18th the barometer had fallen to 29.74 inches at Horta, Fayal. From the 20th to the 23d the center of this disturbance moved northeastward off the west coasts of Ireland and Scotland, and by the 24th had passed to the north of Scotland.

In the United States the first general frost of the season extended from the Northwestern States over the Lake region and central valleys, and as far south as Arkansas and northern parts of Mississippi, Alabama, and Georgia from the 12th to the 14th. Timely warnings permitted protective measures in the districts visited by frost.

Storms of considerable strength crossed the Lake region on the 3d–4th, 8–9th, 27th, and 30th. On the 12th high winds prevailed on the lower lakes attending a storm that passed over the Ohio Valley. On the 24th high barometric pressure over the northern Lake region and low pressure over the middle and lower Mississippi Valley was attended on Lake Michigan by a northeast gale. Ample warning was given and vessels generally sought shelter.

On the 26th and 27th heavy rains in southern Texas caused some damage to cotton, and resulted in floods that drowned cattle, washed away bridges, and damaged railway tracks. All available means of communication were utilized to distribute warnings regarding the impending floods.

BOSTON FORECAST DISTRICT.

The weather of the month was without special features, excepting the excessive cloudiness which was almost continuous after the 17th.—*J. W. Smith, Forecast Official.*

NEW ORLEANS FORECAST DISTRICT.

The first frost of the season occurred in the northern por-